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BULLETIN

OF THE

TORREY BOTANICAL CLUB

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BULLETIN

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TORREY BOTANICAL CLUB

SEPTEMBER, 1922

New species of trees of medical interest from Bolivia

H. H. RUSBY

The botaincal work of the Mulford Biological Exploration of 1921–22 was directed specially toward the investigation of medicinal plants. The distinctly pharmacological features of these plants will be discussed in the medical and pharmaceutical literature, but such unknown species as are encountered should be cited in botanical publications. Two problems of exceptional interest were connected with the botanical origin of the two drugs, "coto" and "cocillana" or "guapi," and their spurious substitutes.

It has never been known what trees yield the coto and paracoto barks, although evident that they pertain to the Lauraceae. For many years, no genuine bark of either has reached our markets, and the use of their worthless substitutes has resulted in destroying the medical reputation of these valuable drugs. Through the careful work of my associate, Dr. O. E. White, of the Brooklyn Botanic Garden, it is now possible to describe the genuine coto tree, as well as its principal substitute, and to provide for the supply of the genuine drug in future. The bark of a second substitute, with leaf-bearing branches, was also collected, but the species cannot be determined from this material, though undoubtedly pertaining to the genus *Nectandra*.

Of cocillana or guapi bark, I collected not only the genuine species, but also the only substitute that has as yet been seen in commerce, besides two other species which, for special reasons, are liable to so appear in future.

The BULLETIN for August (**49**: 223-258) was published August 31, 1922.

Those interested further in these subjects should consult future numbers of the Journal of the American Pharmaceutical Association.

Nectandra coto Rusby, sp. nov.

Young parts, inflorescence and lower leaf-surfaces densely and finely yellowish-tomentellate, the twigs stout. Mature leaves, including the petiole, 10–20 cm. long, 3–7 cm. wide, the petiole 2–3 cm. long, stout, sharply channelled above when dry, reddish brown; blade thick and coriaceous, regularly oblanceolate or slightly inequilateral, abruptly very short-pointed, the point acutish, the margin entire and sharply revolute, the upper surface glabrous and lustrous, drying brownish, the midrib reddish and channelled; lower surface pale, the midrib sharply prominent, the secondaries twelve to fourteen on each side, thin and crooked, lightly prominent, lightly anastomosing near the margin, the interspaces faintly reticulate. Inflorescence (very young in my specimen) axillary, the panicles small and loosely flowered, mostly long-peduncled, but shorter than their leaves even when in fruit, the peduncles and their branches coarsely and strongly angled. Bracts broadly ovate, thick, reddish, obtuse. Buds too young for dissection, appearing while the preceding mature fruit is still attached, tomentose. Calyx-limb wholly deciduous in fruit, the base almost concealing the fruit when young. Fruiting pedicel of variable length, thickened upward and becoming continuous with the calyx. Calyx-cup of mature fruit hard and thick, dark brown, roughly tuberculate, especially downward, broadly campanulate or subhemispherical, 2 cm. or more broad, the margin truncate, roughish, single but showing two distinct layers, the light brown fruit slightly projecting when mature, its summit lightly convex, finely granular or lightly mottled, bearing the very short, stout, acute style.

Mulford Biological Exploration Nos. 1048 and 1050. Collected by Dr. O. E. White as "Coto No. 1" (No. 1048) and "Coto No. 1a" (No. 1050), and under the native names "coto piquiante" and "coto fino." Mountains south of Huachi, near the Cochabamba River, Bolivia, at an altitude of 2500 to 3000 feet, September 9, 1921.

Dr. White's field notes are as follows:—

No. 1048.—A tree 50 to 60 feet high, with few branches except near the top and these short in comparison with the height of the tree. Bark of a cinnamon-brown color, peeling with difficulty, aromatic and very pungent, a few seconds after being chewed, the odor pungent when fresh. Wood of a sandal-wood yellow and a satiny luster, the trunk turning brown after being peeled. Leaves whitish beneath, dark- to light-green and glossy above. Young growth cinnamon-brown. Flower buds whitish. Cup of fruit brown-

green with brown spots, the fruit green, evidently of two generations on the same tree.

It is not possible to say with absolute certainty, from specimens collected in this stage of growth, whether this is a species of *Nectandra* or of *Ocotea*. The slender midribs and veins of the leaves are more those of *Ocotea* than of *Nectandra*, but the tomentose flower-buds are characteristic of *Nectandra*, the flowers of *Ocotea* being usually glabrous. There is no species of either *Nectandra* or *Ocotea* with which this can be identified.

Ocotea pseudo-coto Rusby, sp. nov.

Young growth and inflorescence whitish-puberulent, the lower surfaces of the mature leaves minutely and sparsely puberulent, the branchlets elongated and stout, little spreading, deep red, more or less angled. Leaves, including the petioles, 6–12 cm. long, 1.5–3 cm. broad, the petioles 1–1.5 cm. long, deep red, the upper surface nearly plane. Blades thick, oblong, acuminate at base and with a very abrupt short and stout obtuse point at the summit, the margin entire, not revolute, the upper surface brown when dry, glabrous, slightly lustrous, the midrib slightly prominent, sharply so underneath, the six to eight pairs of secondaries slender, ascending, obscurely connecting near the margin. Panicles axillary, less than half the length of their leaves, sessile or subsessile, broad, rather dense as seen in the young state. Bracts thickish, red, broadly ovate. Perigone thin, glabrous, undeveloped in the specimen. The other floral parts are too young for characterization.

Collected by Dr. O. E. White in the mountains south of Huachi, near the Cochabamba River, Bolivia, at an altitude of 2500 to 300 feet, September 9, 1921. Mulford Biological Exploration No. 1051, collected as "Coto No. 2" and under the name "coto ordinario." It is to be noted that the term "ordinario," as applied by these natives to any substance or article, has the significance that the article is of inferior quality.

Dr. White contributes the following field notes:—

Very large forest tree, growing with Nos. 1048 and 1050 and of the same general habit. Young buds only, and no fruit encountered. Bark thick and easily peeled, not specially aromatic and not pungent. The peeled wood remains white. Wood reddish-white internally.

The same difficulty of identification presents itself with this species as with No. 1050. The buds are a little more developed and the perigone characters are found to correspond with those of *Ocotea*.

The bark of this species is one of those that has very commonly occurred in commerce in this country under both names, coto and paracoto, but sold under either name it is absolutely spurious and medicinally worthless, so far as known.

Aerodiclidium benense Rusby, sp. nov.

Specimen in mature fruiting stage. Glabrous, the twigs numerous, rather slender, terete, densely leafy at the summit. Leaves, including the petiole, 10–15 cm. long, 3–5 cm. broad. Petioles 5–10 mm. long, slender, sharply channelled above. Blades thick and coriaceous, lustrous above, lanceolate, abruptly acuminate at base and summit, with acute apex, the midrib and slender venation scarcely prominent above, sharply so beneath. Principal secondaries five or six on each side, with short intermediate ones, strongly upcurved and connecting near the margin, the reticulation fine and sharp. Margin entire, very slightly revolute. Panicles axillary, less than half the length of their leaves, stoutly peduncled, having one to four shortly and stoutly pedicelled fruits, the pedicels strongly thickened upward. Calyx-cup subhemispherical, about 1.5 cm. broad, hard and thick, heavily wrinkled, its truncate summit with thin, sharp margin projecting slightly beyond the strongly recurved limb so as to form a double mouth, the limb thin, irregularly crenate-dentate. Fruit about 2 cm. long and two-thirds as broad, oval to ovoid, light brown, glabrous, strongly wrinkled at the base and very shortly stipitate, the rounded summit topped by the very short stout style.

Collected by Dr. O. E. White at the second portage of the Bopi River, Bolivia, at an altitude of about 2000 feet, August 8, 1921. Mulford Biological Exploration No. 649.

Dr. White says: "A small evergreen tree 20 to 30 feet high, trunk 6 inches in diameter, growing in damp, partly shady places near the river bank. The fruit is green with white specks, the cup brilliant scarlet-red. Not common."

Guarea Bangii Rusby, sp. nov.

Only fruiting specimens seen. Glabrous, with the exception of the tomentose fruit, pedicels and peduncles, and a very slight short, sparse pubescence on the leaf rachis, petiolules and lower surface of the midribs. Rachis and petiole subterete, slender, together 7–20 cm. long, the petiole varying from one-eighth (in the larger leaves) to one-half (in the smaller ones) of the total length. Leaflets three to five pairs, opposite, the lower successively much smaller, 7–20 cm. long, including the petiolule, which is one-tenth to one-fifth of the total, 3–7 cm. wide, thin, pale green, oblanceolate, acute at the base, the summit very

abruptly contracted into a short and broad, mostly obtuse acumination, the margin entire and not revolute. Midrib usually slightly furrowed on its upper surface toward the base, underneath prominent and slender, like the seven to twelve pairs of mostly opposite secondaries, which are strongly upcurved near the margin, where they are obscurely confluent. Fruit-panicles much shorter than their leaves, sessile or subsessile, rather densely fruited, the rachis and pedicels very stout, the latter little longer than broad, annular-roughened, articulated with the very short stipe of the fruit, which is not so thick as its pedicel. Mature fruit usually a little more than 2 cm. long and nearly or quite as broad, pear-shaped when young, becoming nearly spherical, except for the narrow base, which remains unchanged to form a short thecaphore. Body of fruit obscurely costate or striate, tubercular-roughened and softly and finely tomentose.

First collected by Mr. Miguel Bang, on the hills near Tipuani. Collected also by H. H. Rusby in October, 1921, on the Mulford Biological Exploration, at Rurrenabaque, Bolivia, Nos. 779 and 1590; also No. 2178 ("Guapi B"). All the spurious cocillana bark that has reached our market up to the present has been derived from this species.

A good-sized forest tree of the Mapiri and Beni River region, growing mostly on the hillsides in relatively dry soil, the bark roughly striate and shreddy, and peeling in long, fibrous, thin strips.

Guarea alborosea Rusby, sp. nov.

Glabrous, the petiolule and lower surface of midrib finely verrucose or papillose in the dried state. Petiole and rachis rather stout, deep purple, together 2–4 dm. long, the petiole about one-fifth of the total length, flat on the upper surface, the leaflets five to ten pairs, nearly opposite, the lower somewhat smaller. Petiolules 4–8 mm. long, stout, lightly channeled above, like the midrib. Blades 10–20 cm. long, by 4–8 cm. wide, thickish, pale underneath, oval or slightly narrower either below or above the middle, the base rounded or obtuse, the summit very abruptly contracted into a short, narrow, acute point, the margin entire and not revolute, the venation not at all prominent above, sharply so underneath, the secondaries ten to fifteen on a side, not opposite, straight and slender, moderately spreading, falcate toward the margin, connected by the coarsely reticulate tertiaries. Inflorescence axillary, racemose, simple, or occasionally slightly branched at the base, the racemes recurved-pendulous, often 2–3 dm. long, 1.5–2 cm. broad, densely flowered, the rachis slender, strongly nodose by the flower-scars, the bractlets minute, the flowers divaricate. Pedicels slender, articulated

into the broad concave base, the pedicel proper scarcely one-fifth the length of the flower, obscurely angled. Unopened calyx not seen. Mature flowers about 6 mm. long, the erect unexpanded corolla 2.5–3 mm. broad. Calyx crateriform, 3 mm. broad, closely investing the base of the corolla, deeply four-lobed, the lobes thick, purple, broadly ovate and obtuse. Petals 6 mm. long, 2 mm. broad, oblong, obtuse, slightly thickened at the purple or rose colored summit, the basal portion white. Stamen-tube three-fourths the length of the petals, broadly sulcate, slightly contracted below the mouth, which is not quite so broad as the lower half, the margin shallowly eight-crenate, the small anthers equalling its lobes. Ovary and style appressed-pilose, the ovoid ovary about equalling the stout style in length, the latter reaching the summit of the tube. Immature fruit fig-shaped, abruptly contracted at the base, then tapering into the stout short pedicel. Mature fruit not seen.

A small tree in the forest at Rurrenabaque, Bolivia, at an altitude of about 1000 feet. Collected by H. H. Rusby in flower and fruit, on the Mulford Biological Exploration, October 6, 1921 (No. 797).

The species is peculiar in its very long slender raceme and in the handsome rose and white coloration of its flowers.

Notes on trees and shrubs of the southeastern United States

W. W. Ashe

1. The Castanea pumila group

Castanea pumila Margaretta var. nov.

A tree, sometimes attaining (in Arkansas) a height of 15 m. and a diameter of 1 m., but usually smaller and often a large single-stemmed shrub. Leaves sinuate-serrate with ten to twenty pairs of lateral veins; sun leaves, especially those on flowering twigs, oblong or lance-oblong, 8–15 cm. long, 3–5 cm. broad, acute and somewhat taper-pointed at each end, thick and firm, dark green above, close white-pubescent beneath except on the midrib and veins; shade leaves 5–12 cm. long, 3–6 cm. broad, obovate or sometimes oblong-obovate, obtuse, or rounded and abruptly pointed at the apex, cuneate at the base, thin, pale green on both sides, but more or less pubescent beneath. Staminate aments continuous, 8–12 cm. long, at anthesis 6–8 mm. thick; calyx lobes 3–4 mm. long, obtuse; involucre of fruit bur-like, 2–4 cm. thick, canescent, comparatively thinly beset with branched rigid canescent spines, 3–6 mm. long, which as a rule are not sufficiently dense to conceal completely the involucre. Nut short-ovate, 11–15 mm. long, 7–12 mm. thick, pointed at the tip, shining, blackish brown.

Dry soils or, at the upper edge of the longleaf pine lands of Texas and Louisiana, along the edges of sandy hummocks. The following collections have been made by the writer: Alabama, Winston County; Mississippi, Jackson; Louisiana, Natchitoches and Sabine (Type) Parishes; Texas, Sabine County; Oklahoma, McCurtain County; and Arkansas, common on the mountains. Named for Margaret Henry Newland.

This variety largely replaces the typical *C. pumila* (L.) Mill. west and southwest of Tennessee and is separated from it by having the much shorter and smaller shade leaves of an obovate outline, thinner and often green beneath; by the closer white pubescence on the narrow and acute sun leaves (never velvety and rarely dull grayish); by the spines of the involucre being canescent well toward their tips (those of the typical *C. pumila* being nearly glabrous when mature) and seldom so dense as to conceal the involucre. Nut apparently not quite so plump as that of the type.

CASTANEA ALNIFOLIA Nutt.

The western recorded limit of this dwarf shrub with its subterraneous stems is Louisiana.* It was collected by the writer in Newton County, Texas, during October, 1921, under the same conditions as it grows further east and not exceeding 18 inches in height. *C. alnifolia pubescens* Nutt. has all of the leaves pubescent beneath.

Castanea floridana (Sarg.) comb nov.

Castanea alnifolia floridana Sarg. Bot. Gaz. **67**: 242. 1919.

I have not seen authentic specimens of the tree which Dr. Sargent has recently described and which he separates from the typical *C. alnifolia* by its arborescent form, but it is believed that material collected near Charleston, South Carolina, in 1915 represents it; and, if so, the differences of smaller fruit (which is more densely hispid), somewhat larger leaves with about two more pairs of lateral veins, and entirely different habit of growth justify specific rank.

× CASTANEA NEGLECTA Dode, Bull. Soc. Dendr. France **8**: 155. May, 1908. *C. pumila* × *C. dentata*

According to the description this hybrid is in general like *C. pumila*. It differs, however, in having larger and less densely pubescent leaves, a larger involucre with irregular spines, longer aments, and a single larger nut. The distribution is given as extending from Maryland to North Carolina. As a rule hybrids between *C. pumila* and *C. dentata* have the nuts in pairs, although this is not necessarily the case.

M. Dode has been kind enough to furnish the writer with a list of the specimens at the Museum of Paris, which he refers to *C. neglecta*. Of the seven specimens listed, the locations of five are well within the ranges of both *C. pumila* and *C. dentata*. These are: *Small & Heller 152*, and their collection of June 22, 1891, both from Blowing Rock, North Carolina; *Pearson*, Fairfax County, Virginia, 1844; *Green*, Maryland, 1839; *Bonpland*, Washington, D. C. Since the states only are given for the other two (*Gibbs*, South Carolina, and *Vasey*, Alabama, 1878), it is not possible to determine this.

* Small, Flora S. E. U. S. Ed. 2, 348.

Material collected by the writer in the mountains of Rabun County, Georgia, and Yancey County, North Carolina, largely agrees with Dode's description of *C. neglecta*. In its gross characters it shows, as Dode states, a superficial resemblance to *C. dentata*, having large pointed leaves, not very densely pubescent, and a large involucre with long, irregular, nearly glabrous and closely crowded spines; but there are two nuts to the involucre. Other material collected in flower in Sullivan County, Tennessee, shows similar leaf character.

Castanea Ashei Sudworth, comb. nov.

Castanea pumila Ashei Sudworth, Am. For. **28**: 300. 1922.

This is the common chinquepin of the coastal plain of the Southern States. Its distribution begins in northeastern North Carolina and extends to Louisiana (and probably to southeastern Texas). It is separated from *C. pumila* by its smaller foliage, shorter and more slender aments, canescent spines on the involucre and prevailingly thicker nuts. Walter (Fl. Car. 233. 1788) notes two forms (without description), *praecox* and *serotina*. *C. Ashei* is possibly his forma *praecox*.

The type of *C. pumila* (L.) Mill. (*Fagus pumila* L.) came from eastern Virginia (Gronovius, Flora Virginica 118. 1739), within which region the only known form is that which is here regarded as typical *C. pumila*.

Key to Castanea pumila group (one nut to the involucre)

Al=Alleghanian; C=Carolinian; A=Austral.

Spines of mature fruit densely set, glabrous or glabrate.
- Leaves soft-pubescent beneath..... *C. pumila* (Al & C).
- Leaves 10–20 cm. long, more or less glabrate.. × *C. neglecta* (Al).

Spines of mature fruit not densely set, canescent or tips merely glabrate.
- Leaves 10–15 cm. long; 12–20 pairs of veins.
  - All leaves closely white-pubescent beneath..... *C. Ashei* (A).
  - Interior leaves green beneath or glabrate..... *C. pumila Margaretta* (C).
- Leaves 6–10 cm. long; 8–16 pairs of veins.
  - Only uppermost leaves on twigs white-pubescent beneath.
    - 10–16 pairs of veins, non-stoloniferous. *C. floridana* (A).
    - 8–12 pairs of veins, a dwarf stoloniferous shrub..... *C. alnifolia* (A).
  - All leaves white pubescent beneath..... *C. alnifolia pubescens* (A).

2. MISCELLANEOUS SPECIES

× **Quercus coloradensis** hybr. nov. *Q. virginiana* Mill. × *Q. macrocarpa* Mx.

Leaves heterophyllous, entire and oblong or undulate, sinuate or lobed, especially near the apex, with short abruptly acute or obtuse lobes, 4.5–10 cm. long, 2–4 cm. wide, thick and subcoriaceous, dark green above, strongly reticulated and densely close white-pubescent beneath, revolute on the margins; twigs 3–4 mm. thick, permanently close pale gray pubescent. Fruit 2.5–3 mm. long, excluding peduncle (which is often of half the length of the fruit); cup covering one-half or more of the oblong nut, obconic or slightly rounded, covered with slender acute, closely imbricate scales, either thin at the top or much thickened by several overlapping rows of scales and incurved at the edge.

Along the Colorado River above Marble Falls, Texas. While the overcup oak is rare in this region, the cup-character points to that species rather than to *Q. acuminata* Houba or *Q. stellata* Wang. as a possible parent.

Quercus nigra elongata comb. nov.

Quercus aquatica elongata Ait. Hort. Kew. ed. 1, **3**: 357. 1789.

In the third edition of Aiton's work there is a reference to a plate (Abbott, Insects Ga. 2: *pl. 29.*), which figures the leaf-form described by Sargent under his *Q. nigra tridentifera* (Bot. Gaz. **65**: 429. 1918).

Malus elongata pubens var. nov.

In general similar to the type but having somewhat broader leaves, permanently soft-pubescent beneath

Head of Chattoga River, Rabun County, Georgia, October, 1913, *W. W. A.*

Malus platycarpa parvula var. nov.

Foliage in general similar to that of type, but the leaves more ovate in outline and smaller; fruit of the same shape but much smaller, no larger than that of *M. elongata.*

Habersham County, Georgia, October, 1913, *W. W. A.*

Commelinantia, a new genus of the Commelinaceae

B. C. THARP

(WITH PLATES 10 AND 11)

Few if any families of plants have members in more urgent need of field study than are those of the family Commelinaceae. Their evanescent corollas, which it is difficult even to bring from field to laboratory without injury; the delicate shades of color which are lost in pressing; and their succulent stems, which shrink tremendously in drying, make field study imperative if one is to get any adequate idea of these delicate details as they appear in the growing plants. Since 1919 I have had abundant opportunity for field study of a very interesting member of the family, a species first described by Torrey* as *Tradescantia anomala* and latter transferred by C. B. Clarke† to the genus *Tinantia*, where it has remained to the present time.

Torrey's description, based upon specimens from Texas, (one of Wright's, and one of Thurber's), preserved in the herbarium of the New York Botanical Garden, is surprisingly good, considering that it was drawn wholly from dried material. Such details of general habit, sepals, petals (except color), filaments (except that of the posterior stamen), anthers, style, stigma, and ovules, as are pointed out, are correctly described. The greatest error into which his material led him seems to have been in considering the ovary and capsule two-celled. He also described the seeds as being "as in the rest of the genus," which is incorrect. The wonder is that, having examined his material so carefully as to be able to write such an accurate description, he could feel justified in assigning this species to the genus *Tradescantia*. That he was none too confident of its having been correctly assigned is abundantly testified by the specific name, by legends‡ on the sheets containing his specimens, and by his

* U. S. and Mex. Bound. Bot. 225. 1859.

† DeCandolle, Monog. Phaner. **3**: 287, 1881.

‡ Wright's specimen is labelled "Wright, Texas, *Commelyna anomala*, Torr. *Tradescantia anomala* Torr.," the word "*Commelyna*" being stricken out. Thurber's specimen is labelled "Thurber, San Antonio Texas, May 1853. *Commelyna rhodantha*, Torr."

observation that "the species is intermediate between *Tradescantia* and *Commelyna*."

Clarke's description of *Tinantia anomala* appears to be based neither upon the excellent original by Torrey, nor upon any critical examination of material of the species. He characterizes the plant as glabrous, the leaves as ovate-cordate, the three longer stamens simply as "naked above," the three shorter as having "golden bearded anthers," the stems as "dichotomously branched," the inflorescence as being "almost included in the subcomplicate uppermost leaf," the petals as being "obovate-elliptic, bluish" (by inference all alike in size and appearance). With the exception of the capsule, the measurements of all structures are under-stated. His specimens may not have shown the basal linear-lanceolate, ciliate, leaves; his scant measurements may have been due to his materials having shrunken in drying, and his representation of the "uppermost leaf" as "subcomplicate" may have been due to his specimens having been somewhat wilted before being pressed; but there seems no valid excuse for so inaccurate a description of stamens, or for characterizing the stems as dichotomously branched, or for totally ignoring the description (excellent so far as it goes) of Torrey. His observation, concerning the relationship existing between the type species (*T. fugax*) and the other species, that "caeterae species . . . cum *T. fugace* . . . militant; et ad *Tinantiam* ex necessitate referendae sunt, nisi genus *Tinantia* ad *Tradescantiam* reducatur," seems to be in the nature of an apologetic attempt at justification, though it is difficult to see the logic in his statement.

My own experience with an abundance of fresh material of the species in question constrains me to call attention to the following characteristics, which keep it from being properly placed in the genus *Tinantia* as characterized by Clarke: branches which break through the leaf sheaths; flowers in a simple terminal scorpioid raceme subtended by a *single, broad, erect, flat, cordate, clasping spathe*; colored lateral petals much larger than the very small anterior white petal; stamens of four distinct kinds as regards size and pubescence.

The character of the stamens and of the spathe and the habit of the branches breaking through the leaf sheaths are sufficient to exclude it from either *Commelina* or *Tradescantia*. The former has difformed stamens, all of whose filaments are entirely

glabrous and some of whose anthers are sterile; a spathe which is folded so as to protect alike the flowers bud and the ripening capsule, the flower being projected above the edges of the spathe only during the very brief period of bloom: the latter has stamens all alike in size and pubescence and all fertile; the inflorescence subtended by one or more (usually two) unlike bracts, never by a spathe. Neither *Commelina* nor *Tradescantia* has branches which break through the leaf sheaths. This habit, however, is held in common with certain tropical genera to which the species has never been heretofore compared. Dr. Pennell has kindly gone over the whole family as represented by specimens in the New York Botanical Garden Herbarium and reports the following genera as having this habit:

1. *Callisia* (tropical American) lacks spathe, has uniform petals and stamens.
2. *Campelia* (tropical American) has spathe, but uniform petals and stamens, white.
3. *Cyanotis* (tropical Asia) has series of overlapping spathes.
4. *Dichorisandra* (tropical American) lacks spathe, inflorescence a panicle.
5. *Floscopa* (tropical American and Asia) lacks spathe, inflorescence a panicle.
6. *Forrestia* (tropical Asia) lacks spathe, inflorescence congested erupts spathe.
7. *Pollia* (tropical Asia) lacks spathe, inflorescence a panicle.
8. *Sauvellea* (Cuba) has spathe, but petals and stamens uniform; repent.
9. *Streptolirion* (China) has spathe below cymes or panicle, but petals and stamens uniform, the filaments bearded. Stem twining.
10. *Tradescantella* (Florida) lacks spathe, but petals and stamens uniform. Repent.
11. *Zebrina* (tropical American) has two bracts below the congested inflorescence; petals uniform, at base approximating to form a corolla-tube. Repent.

The species differs from any of these generic groups in its combination of erect habit, single, flat, erect, spathe; unequal petals; and stamens of four forms.

In addition to the several genera listed above, Dr. Pennell finds that *Tradescantia Pringlei* S. Wats.* also has leaves which break through the sheathes. Moreover, it has the following additional characters which ally it very closely to *T. anomala*: general appearance very similar; inflorescence a simple scorpoid raceme (or frequently reduced to only one flower); stamens probably like those of *T. anomala* in that there are four kinds,

*Trans. Am. Acad. **26**: 157. 1891.

implied by the following statement: "stamens 6, unequal, the longer with filiform filaments bearded in the middle (or one naked) and broadly oblong anthers, the shorter filaments densely bearded in the middle with green gland-tipped hairs, the anthers orbicular; anther cells contiguous." The stamen corresponding to the posterior stamen in *T. anomala* might, by casual examination, have been counted as being like the postero-lateral ones.

But *T. Pringlei* has the following characters in conflict with *T. anomala*: plant green, not glaucous; cauline leaves uniformly ovate, abruptly acuminate, none modified to form a definite "spathe" (though the slender peduncles of *T. Pringlei* frequently have one or more much reduced sheathes below the inflorescence), inflorescence axillary, petals uniform, all blue ("purple" ?). Though *T. Pringlei* thus shows such strong resemblance to *T. anomala* in certain characteristics, yet because of these important points of dissimilarity and because of insufficient material for critical study I feel constrained to be content with pointing to it as perhaps the closest existing relative of *T. anomala*, leaving the question of its assignment to the proper genus to be settled by a more critical study of more abundant material. Certainly it can not properly belong in the genus *Tradescantia*!

Confining my attention, therefore, in the present paper to the placing of *T. anomala*, it seems not only justifiable but necessary to make it the type of a new genus.* Following the suggestion of Torrey that the species has certain characteristics which ally it to *Tradescantia* and *Commelina* and recognizing the fact that it was assigned to *Tinantia* more than forty years ago, I propose a sort of hybridization of these names, giving the new genus the name *Commelinantia*. The generic description which follows is made broad enough to include some of the distinctive characters of *T. Pringlei*, acting on the probability that this species will ultimately be assigned to the new genus.

COMMELINANTIA gen nov.

Annual succulent plants, somewhat resembling species of *Commelina*: stems 2–8 dm. long, erect, ascending, or decumbent.

* Since I began the study of this species with the view of determining the propriety of retaining it in *Tinantia*, I have learned that Dr. J. K. Small had decided to segregate it as a distinct genus in the next edition of his Flora of the Southeastern United States.

glabrous, much branched at maturity, the branches ascending, breaking through the close-fitting leaf-sheaths: *basal leaves* 0.5–3.5 dm. long, acute or acuminate, smooth or slightly pubescent with a few long hairs, appearing in early winter after the fall rain; *lower cauline leaves* resembling the basal leaves, 0.5–2.5 dm. long, the petiole arising from the closed sheath; *upper cauline leaves* generally shorter and broader than the lower; *inflorescence* a simple scorpoid, peduncled raceme, terminating branches and stems (or sometimes axillary and reduced to a single flower); *flowers* one or more (usually), each subtended by a small ovate bract; *calyx* of three similar, green, ovate, imbricated, persistent sepals; *corolla* showy, the petals equal or very unequal; *stamens* six, all fertile but dissimilar in size and in degree of pubescence; *ovary* oblong, three-celled, with two superimposed ovules in each cell, the stigma capitate; *capsule* loculicidally three-valved, the seeds greyish brown with copious endosperm surrounding the transverse embryo.

Commelinantia anomala (Torr.) comb. nov.

Tradescantia anomala Torr. U. S. & Mex. Bound. Bot. 225. 1859.

Tinantia anomala C. B. Clarke; De Candolle, Monog, Phaner. **3**: 287. 1881.

Pea green, usually glaucescent throughout: *stems* clustered, at first simple but later much branched, more than one branch frequently arising at a single node (especially in the upper part of a stem late in the season); *basal leaves* 2–3.5 dm. long, linear-spatulate, attenuate into long ciliate petioles below, rather pale green, glaucescent, slightly pubescent with a few long hairs above; *lower cauline leaves* 1.5–2.5 dm. long; *upper cauline leaves* sessile at the top of the sheaths or short-petioled, 0.5–2 dm. long, broadly or narrowly lanceolate or somewhat cordate and clasping at the base, acute or acuminate; *inflorescence* strictly terminal on stems and branches, subtended by a spathe strongly resembling the upper cauline leaves except in being erect, shorter (4–8 cm. long), broader, and strongly cordate-clasping at the base and in having no sheath; *flowers* three to sixteen or more, the bracts persistent, glabrous and green, each usually 3–5 mm. long; *sepals* keeled, slightly hooded, blunt, 9–12 mm. long, glandular-ciliate above the middle in the bud, a few apical cilia being persistent; *corolla* of two postero-lateral very showy lavender blue petals and a very small and in conspicuous anterior white petal, the showy petals almost rhomboid, 1.5–1.8 cm. long and somewhat broader than long, the small petal ovate-rhomboid, 3–4 mm. long, and longer than broad; *stamens* with filaments, of four distinct forms— (*a*) the posterior stamen densely bearded (except at the extreme apex, at the

extreme base and in the lower two-thirds of the inner face) with showy lavender-purple hairs, (*b*) the two postero-lateral densely bearded above the middle with a collar of short lavender-purple yellow-tipped hairs, (*c*) the two antero-lateral bearded below the middle on the posterior margin with a tuft of short lavender hairs, and (*d*) the anterior stamen glabrous throughout—anthers of the three anterior stamens oblong, these stamens being manifestly larger throughout than the posterior stamens, the latter with orbicular anthers; *ovary* constricted in the middle, the stigma terminating a slender bent white style; *capsule* oblong, 6–8 mm. long; *seeds* 3–3.5 x 2–2.25 mm., rounded at one end, truncate at the other, with a curved longitudinal grooved hilum on the inner face, near the center of which lies an apparent eccentric perforation containing the minute embryo; *endosperm* not continuous but separated by an obscure commissure on one side and bearing a group of low broad, tuberculate ridges radiating from the sides of the embryo cavity, where it comes through to the outer surface.

In rich, moist, shaded soil of ravines and rocky hillsides of the Edwards Plateau, Texas; February to October, but principally March to May. Original localities, according to Torrey: "shady woods on the Blanco, Comale, and other rivers, Texas; *Wright*, (No. 699.) San Antonio, Texas; *Thurber*."

A comparison of Torrey's description with that submitted herewith will reveal several places wherein certain differences appear. These differences are: (1) in the height of the plant; (2) length of basal leaves; (3) number of flowers per raceme; (4) I can find no evidence of wings on the margin of the posterior filament and am at a loss to account for Torrey's mention of such structures unless he examined the filament in question only from the flat naked inner face of pressed material; (5) the ovary is uniformly three-celled with two superimposed ovules in each cavity, though failure of fertilization will of course cause abortion of any one or more of the six, with a consequent great variation in the appearance of the capsule; (6) the seeds, though superficially resembling those of *Tradescantia*, are different from any *Tradescantia* seeds I have examined in that the cavity containing the embryo extends entirely through the seed, the endosperm instead of being continuous around the embryo is separated by a commissure that extends to the embryo-cavity on one side, and the seeds of *C. anomala* are of greater size. Other points which are brought out in the description submitted herewith are not mentioned in that of Torrey.

COMMELINANTIA ANOMALA (TORR.) THARP

COMMELINANTIA ANOMALA (TORR.) THARP

I am indebted to Dr. F. W. Pennell, now of the Philadelphia Academy of Sciences, for helpful criticism and advice, for assistance in looking up the literature, and for access to a specimen of *Tinantia Pringlei*.

UNIVERSITY OF TEXAS.

Explanation of plates 10 and 11

PLATE 10

Plant of *Commelinantia anomala* (Torr.) Tharp, showing typical appearance of a flourishing specimen in bloom. The specimen is somewhat wilted causing the spathe to fold slightly. The linear-spatulate basal leaves, characteristic of plants during winter months, have disappeared by the time the stems have reached this stage of maturity. Scorpoid racemes seen in profile. Scale in inches.

PLATE 11

FIG. 1. Inflorescence of *C. anomala*, showing the position assumed by each flower as it comes into bloom. The spathe is somewhat wilted, causing it to roll slightly at the edges. Scale metric.

FIG. 2. Dissected flower to show relative size and general appearance of parts.

FIG. 3. Stamens from a bud several hours before anthesis; magnified eight diameters. The filaments have not attained nearly the length of those in an open flower, but the anthers are beginning to dehisce. Relative size and shape of mature anthers, and also the nature of the pubescence of filaments well shown.

INDEX TO AMERICAN BOTANICAL LITERATURE
1912–1922

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in the broadest sense.

Reviews, and papers that relate exclusively to foresty, agriculture, horticulture, manufactured products of vegetable origin, or laboratory methods are not included, and no attempt is made to index the literature of bacteriology. An occasional exception is made in favor of some paper appearing in an American periodical which is devoted wholly to botany. Reprints are not mentioned unless they differ from the original in some important particular. If users of the Index will call the attention of the editor to errors or omissions, their kindness will be appreciated.

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